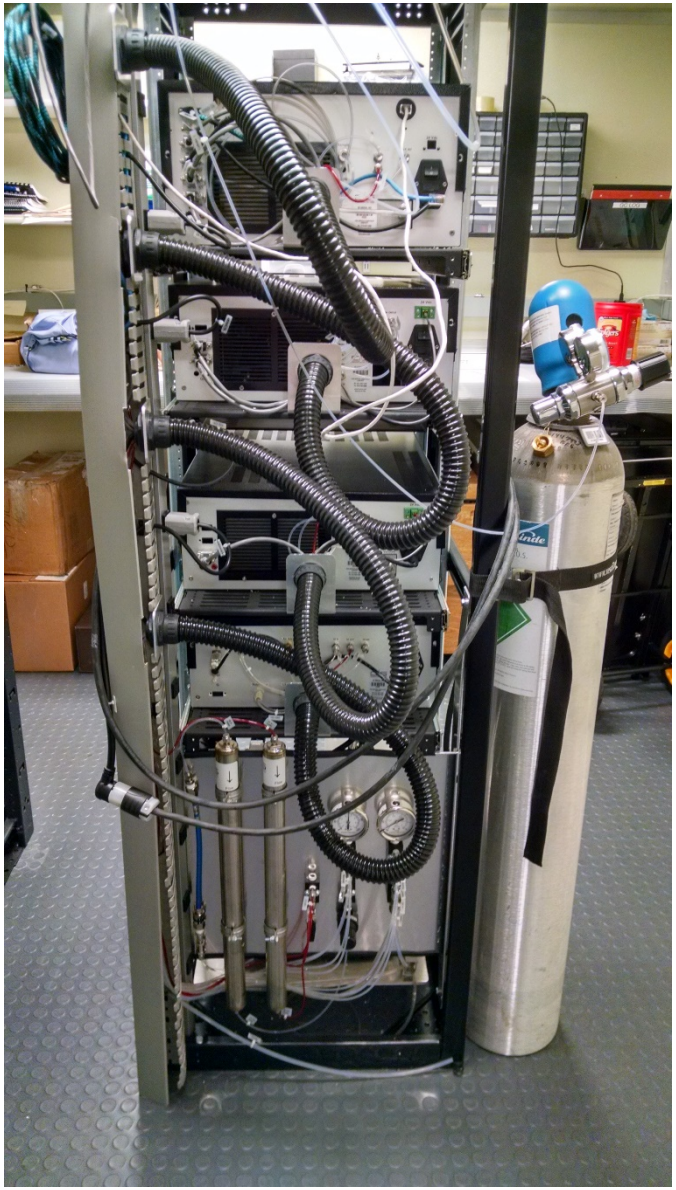
CAS PAMS GC vs Sanity

Chuck Sarnoski & Angelina Rogers
Delaware DNREC / DAQ

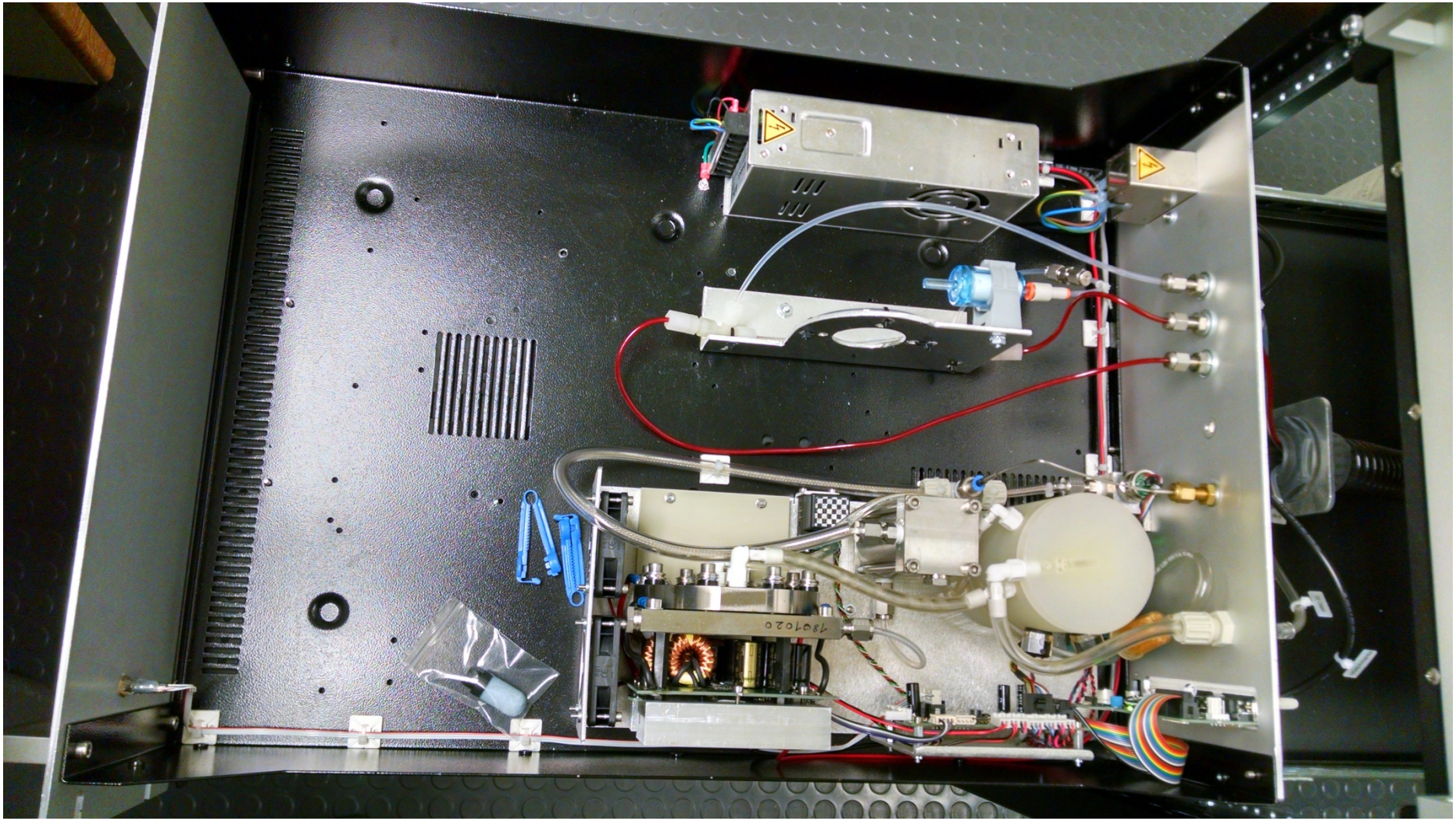
Why CAS?

- Performed well in EPA "Shootout"
- Integrated system delivered assembled
- One vendor responsible for service issues
- No staff to operate GC
- Routine activities performed with *"ease"*
- Internal calibration source "Perm Tubes"
- Direct communication with station logger
- Small footprint
- Manufacturer support in same time zone

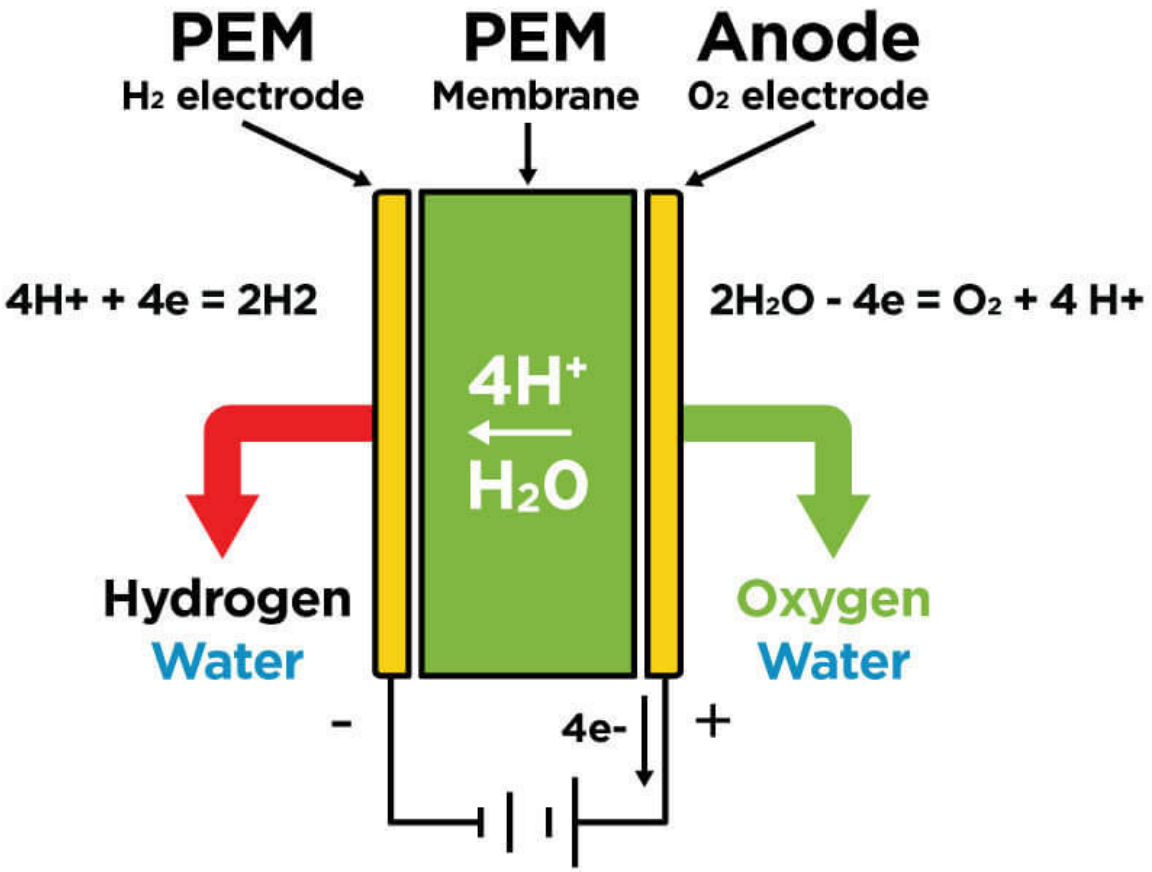
GC 866
airmoVOC
airmoCAL
GC 866
airmoVOC



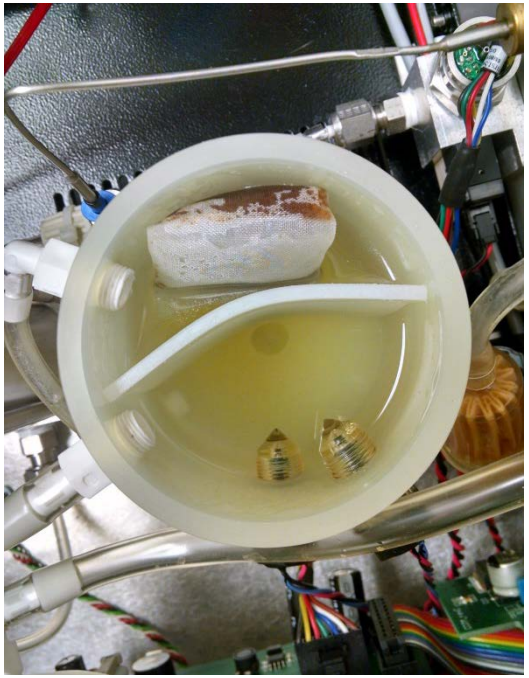
Perkin Elmer GC



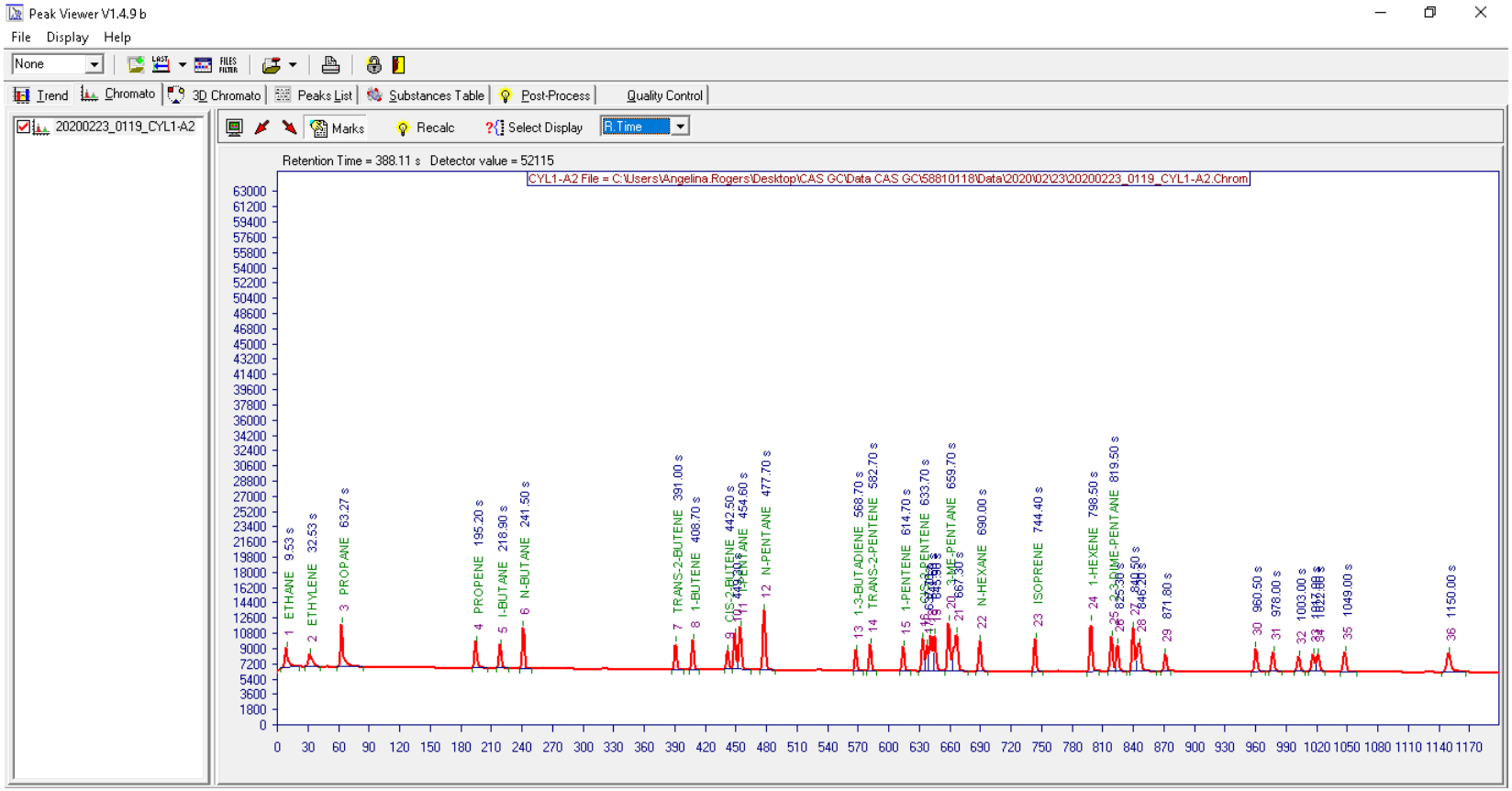
How the H2 Generator Works



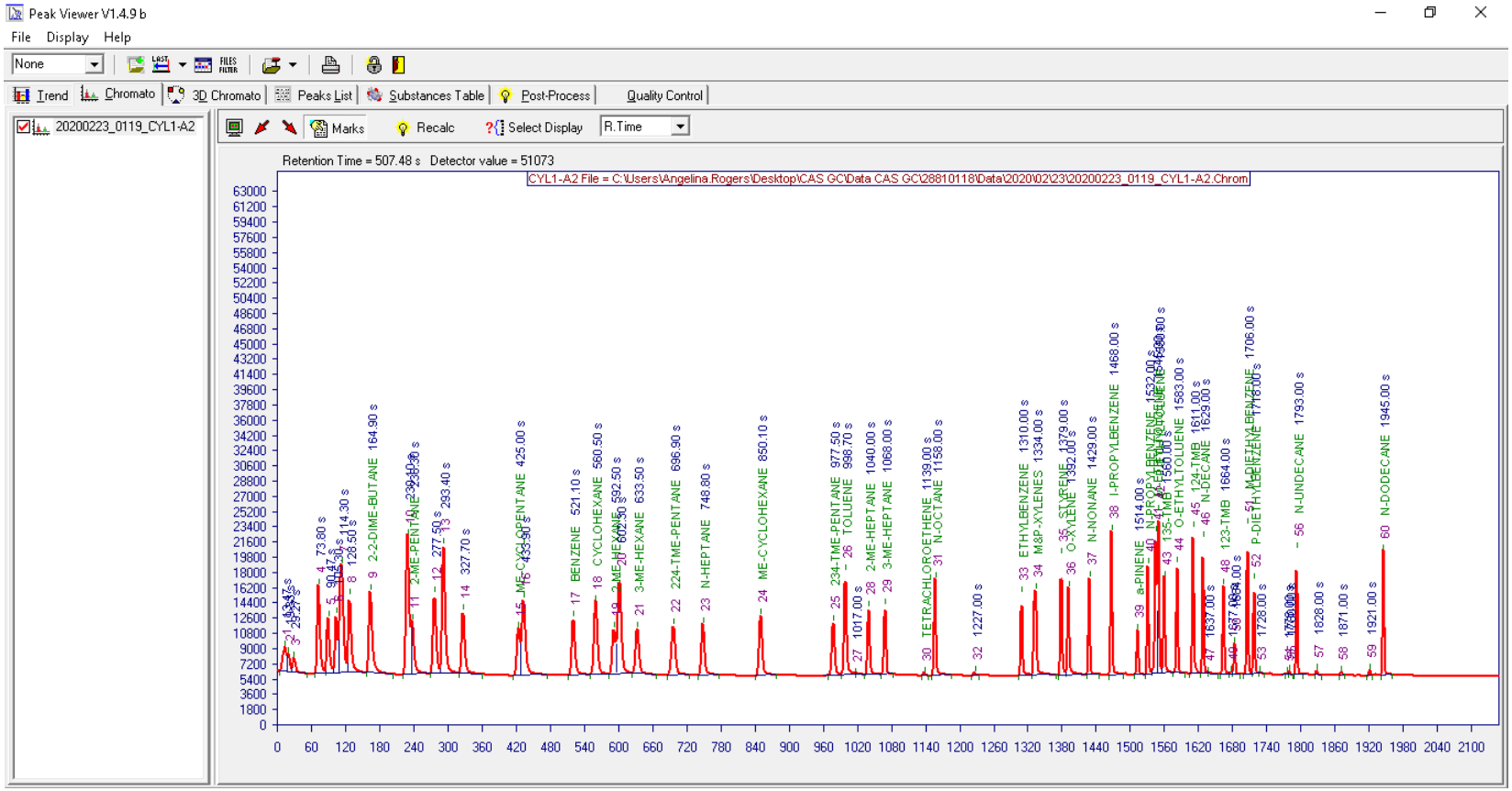
Internal Reservoir – new recommended configuration



C2-C6 Chromatogram



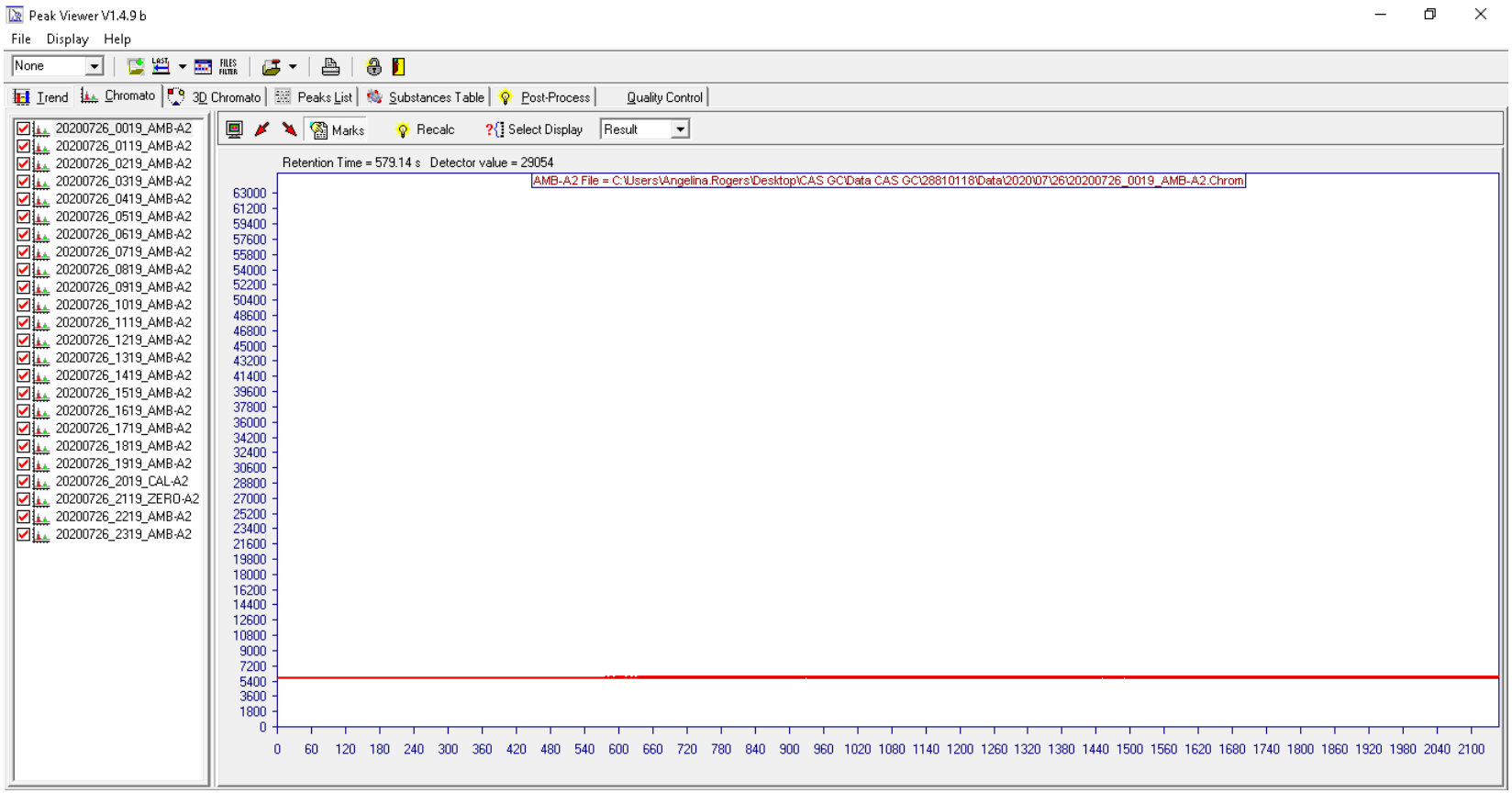
C6-C12 Chromatogram



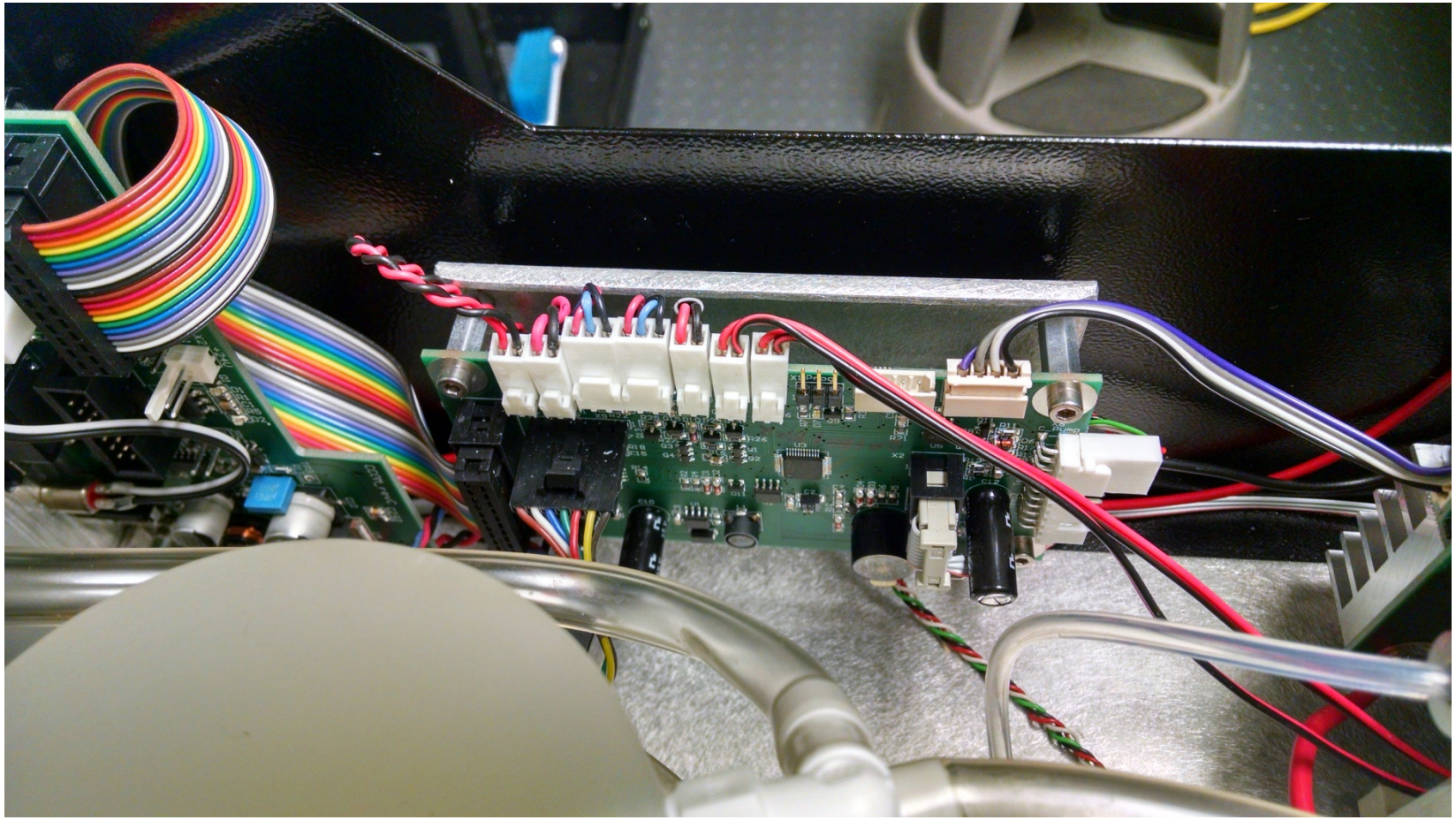
Issues

- Blank contamination - mainly propene and propane
- H2 water sensor error
- C6-C12 flatlined
- VNC remote connection lost: may be due to newest version incompatible with Windows 7 on CAS GC
- H2 generator failure: sent back entire H2 generator for membrane cell replacement
- H2 generator still not operational: sending us a board we will attempt to replace ourselves
- Currently very short staffed

Flatlined C6-C12



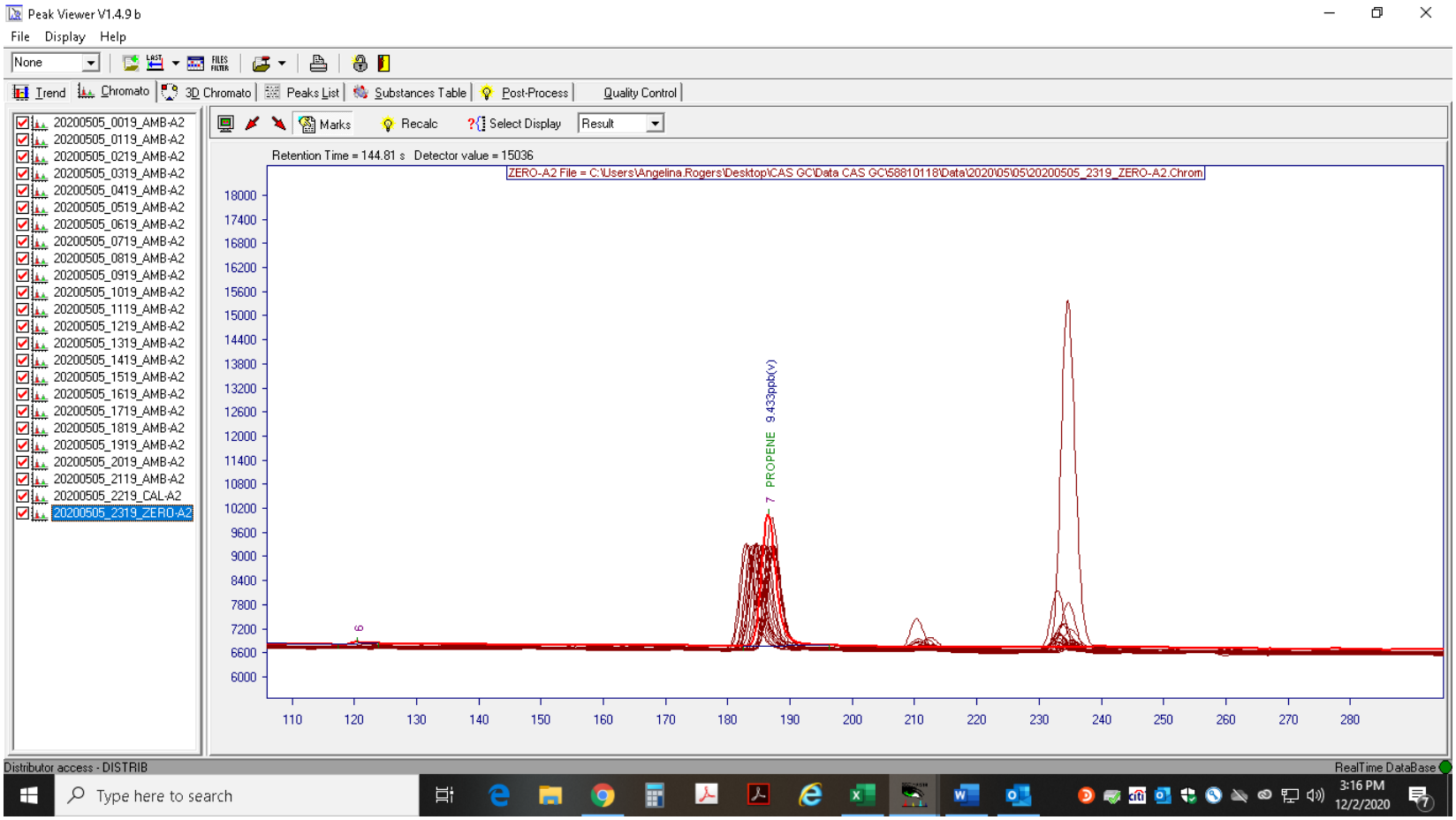
Board to be replaced



Data Handling

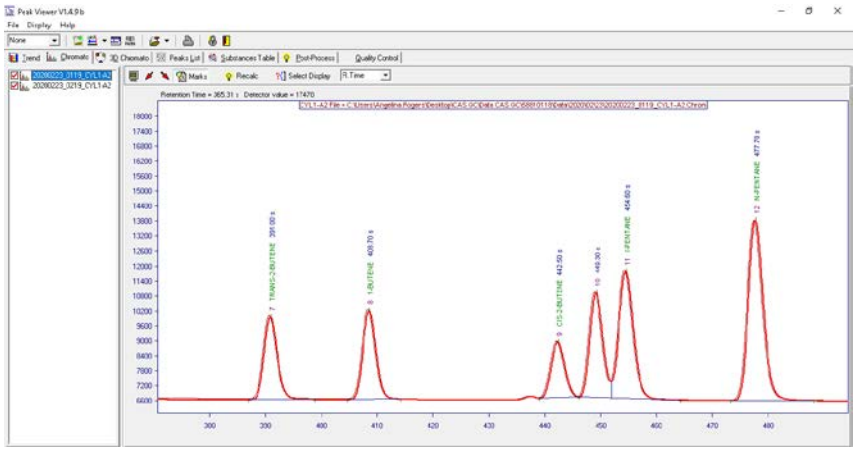
- Organization will be necessary for tracking of re-processed data
- CAS allows overwrite of substance tables so each one will need unique ID **ONLY 8 characters to work with!!!**
- A lot of baseline shifting so daily monitoring needed
- Reestablish remote connection
- Devote Angelina to sole GC responsibility for PAMS season and to finish data processing
- Work with others from Auto-GC workgroup call to learn from their experience/ QC guidance

Blank contamination and baseline shifting

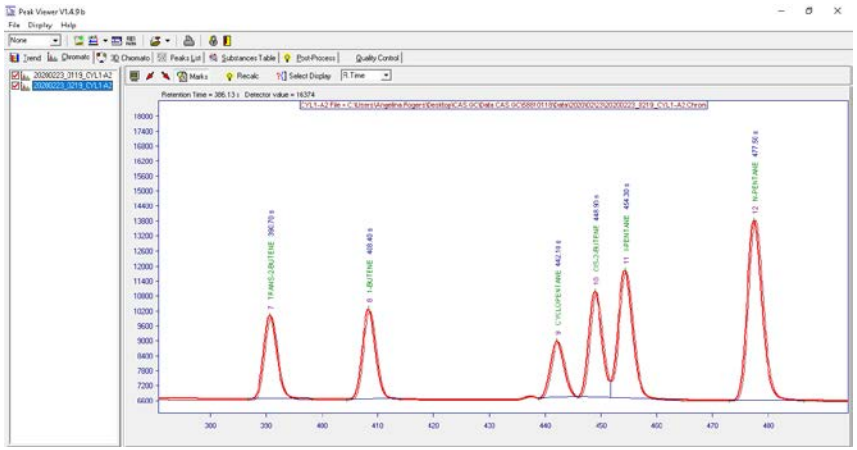


Baseline shifting and swapped compounds

Cyl 1



Repeated Cyl 1 Precision check



Initial Monthly QC Report…work in progress

CAS GC Daily Check Log									
			Permeation Tube Std		(CCV)	Concentration (ppb)		Month/Year: September / 2019	
			N-Butane			15.54			
Site: MLK, Wilmington, DE			N-Hexane			10.24			
			Benzene			20.2			
Date	System Blank < MDL or 0.5 ppbC		**C6-12 #28810118** N-Hexane, Benzene		% Difference	**C2-6 #58820118** N-Butane, N-Hexane		% Difference	Cylinder RT Std All target VOCs within RT windows
9/1/2019	ethylene, propane, propene, acetylene, n-hexane, n-undecane, n-dodecane					N-Butane:	15.06	-3.09	
		N-Hexane:	10.33		0.88	N-Hexane:	9.86	-3.71	C2-6: (6), (9)
		Benzene:	20.14		-0.30				C6-12: (3),
9/2/2019	propane, propene, acetylene, n-hexane, n-undecane, n-dodecane					N-Butane:	15.24	-1.93	
		N-Hexane:	10.45		2.05	N-Hexane:	9.95	-2.83	C2-6: (7), (9), (11)
		Benzene:	20.31		0.54				C6-12:(3),(1),(2),
9/3/2019	propane, propene, acetylene, n-hexane, n-undecane, n-dodecane					N-Butane:	15.19	-2.25	
		N-Hexane:	10.45		2.05	N-Hexane:	9.97	-2.64	C2-6: (7), (9), ()
		Benzene:	20.3		0.50				C6-12: (1),(2)
9/4/2019	DNR: system down					N-Butane:		-100.00	
		N-Hexane:			-100.00	N-Hexane:		-100.00	
		Benzene:			-100.00				
9/5/2019	ethylene, propane, propene, acetylene, n-hexane, 3-me hexane, n-undecane					N-Butane:	15.24	-1.93	
		N-Hexane:	10.38		1.37	N-Hexane:	10.01	-2.25	C2-6: (7), (9)
		Benzene:	20.26		0.30				C6-12: (1),(2)
	ethylene, propane,								